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(72) Inventors:
• Smith, Terry M.
La Honda, California 94020 (US)
• Marshburn, James P.
San Jose, California 95138 (US)

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(74) Representative: Vaufrourard, John Charles
Elkington and Fife
Prospect House
8 Pembroke Road
Sevenoaks, Kent TN13 1XR (GB)

(71) Applicant: Space Systems/Loral, Inc.
Palo Alto, California 94303 (US)

(54) Positionable satellite antenna with reconfigurable beam

(57) An antenna system (10A), is suitable for use on a communication satellite encircling the earth, and has a reflector (18) illuminated by a set of feed elements (22) wherein one of the feed elements generates a primary beam (30). The reflector (18) is shaped to establish a specific configuration of the beam, and, upon illumination of the earth, there results a specific shape to the beam footprint (38). A mechanical positioning device (16) connects the antenna with a body (14) of the spacecraft for adjusting an orientation of the feed antenna (12)

and its beam (30) relative to the body (14) of the spacecraft. Control circuitry (26) for adjustment of signal strengths and phase shifts of signals sent to respective ones of the feeds (22) is accomplished by electronic circuitry including a memory (52) which stores coefficients employed in the operation of variable power dividers (62) and variable phase shifters (60) of a feed network (46A) supplying electromagnetic signals to the feed. The memory is addressed to provide a desired correction to beam configuration corresponding to a specific orientation of the antenna.

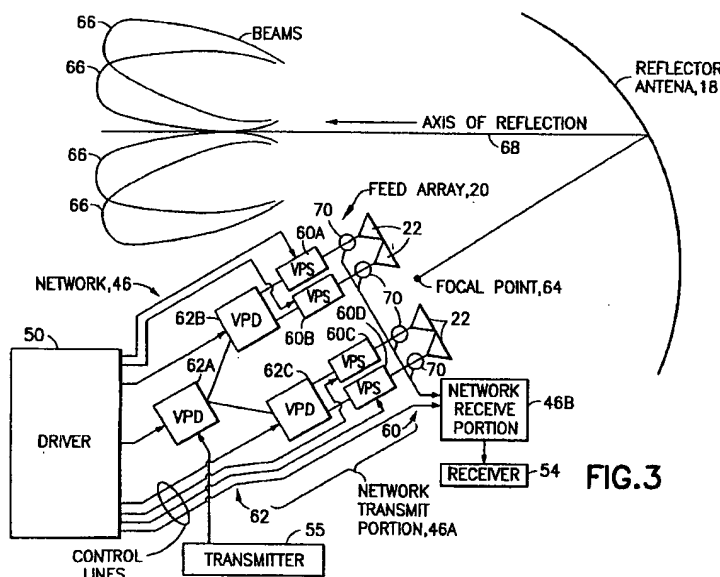


FIG. 3

EP 0 915 529 A1